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Review

Lean implementation within manufacturing SMEs in Saudi Arabia: Organizational culture aspects

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ABSTRACT

There is a scarcity of research about cultural aspects and organizational culture related to Lean Implementation (LI) (Pakdil and Leonard, 2015). The purpose if this paper divided into four stages. First, to identified the influences aspects of Lean Implementation (LI). Second, aggregate the aspects into themes. Third, gauging current perception of participants against the themes. Finally, identified a culture position that manufacturing SMEs should aspire to the most effective Lean Implementation (LI). In order to addressing the need for Organizational Culture (OC) to better facilitate Lean and propel its success among Small and Medium Enterprises (SMEs) in Saudi Arabia as a case, grounded theory, action research and an inductive approach has been selected. Due to the nature of the topic requiring the exploration of culture, it is beneficial to utilise qualitative research which is provided by grounded theory that has been adopted. Thus, adhering to the grounded theory process utilising an issue focused approach (Sackmann, 1991). Twenty-nine semi-structured interviews and two focus-groups were chosen to conduct this exploratory study and a questionnaire which has been derived from the second focus group to gauge the OC themes within the SMEs, A total of 71 responses were returned. A literature review to identified the ideal position for the themes. An inter-rate reliability to validate data. The finding of the semi-structured interviews were 37 aspects that influences the implementation of Lean in manufacturing SMEs within Saudi Arabia. In addition, the 37 aspects were aggregate into 7 themes in the first focus group. Moreover, the result form questionnaire indicates many issues that were identified, all the results were in the dissatisfaction area. The lowest scoring theme was *change management and behaviour patterns.* This paper contributes to the ideal position were the manufacturing SMEs where it should be to aspire the most effective Lean.

Contents

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1. Introduction

Implementing Lean into manufacturing within Small and Medium sized Enterprises (SMEs) within Saudi Arabia faces difficulties (Karim et al., 2011). Organizational Culture (OC) is one of the most important factors to focus on to facilitate the implementation of Lean within Saudi Arabian manufacturing (Karim and Arif-Uz-Zaman, 2013). Moreover, the culture of an organisation plays a vital role for managers facing the challenge to change that culture (Graham-jones and Muhareb, 2015). It is necessary to have a feasible Lean framework to assist SMEs to successfully implement Lean (Pingyu and Yu, 2010). In addition, the main challenge faced SMEs in KSA was changing OC and peoples' mind-set (Alkhoraif, 2016; Albliwi et al., 2017; Alkhoraif and Mclaughlin, 2017). Studies have shown that many researchers are in agreement that an Organizational culture which does not support Lean is a large reason for the failure of successful Lean Implementation (Munene, 1995; MacDuffie and Helper, 1997; Dixon, 1999; Brown, Willis and Prussia, 2000; Womack and Jones, 2003; Schonberger, 2007). For the purpose of this paper SMEs refer to organisations with fewer than 250 employees where European Commission definition adopted (European Commission, 2011) Saudi Arabian government as part of its vision from now to the year 2030, to improve and find quality solutions for SMEs. The objective of these manufacturing firms is to develop, be competitive and to increase its contributions of the Gross Domestic Products (GDP) from 20% to 60% (Government, 2015). In addition, the intention is to increase the private sectors GDP contributions from 40% to 65% by raising the share of non-oil exports from 16% to 50% (ibid). It is important to clarify that the GDP of the Kingdom of Saudi Arabia (KSA) was estimated at Saudi Riyal (SR) 608 billion in 2015–2016 ($ 162.133 billion) (Finance, 2015). The exploring and gauging will be designed for SMEs, but it will be built at a generic scale to suit other cases as well. The article should have as few size constraints as possible, and to create it there will be a need to discover as many inhibiting factors as possible. These inhibiting factors, and indeed those factors that encourage this behaviour can be graphically displayed and tabulated, allowing deeper analysis of each, to find its roots and, where necessary, remove it from the company culture (Hietschold et al., 2014) . In addition to that, many factors explain why this research was conceived:

- The success of Lean implementation will not just be based on applications, tools and techniques, but also on the top managements' involvement, leadership and Organizational culture (Jadhav et al., 2014).
- Culture is the key factor to making the changes for Lean implementation (Pakdil and Leonard, 2015).
- Lack of research regarding the critical factor of Organizational culture related to Lean implementation (Pakdil and Leonard, 2015).
- Lack of knowledge and difficulties in implementing Lean in the Middle Eastern and Gulf countries, but also and increasing concern of Lean implementation in SMEs (Al-najem, 2014)
- Focusing on sustaining Lean Implementation is much more demanding than cost reduction (Gupta et al., 2016).
- There is a clear dearth in research of Lean implementation for SMEs in developing countries (Hu et al., 2015)
- Organizational culture is the key challenge faced in KSA manufacturing sector (Albliwi et al., 2017).

The aim of this paper is to explore and evaluate Lean Implementation into small and medium enterprise manufacturing organisations in Saudi Arabia by leveraging aspects of Organizational Culture. The objectives of this paper are:

- To investigate, via a field study, the Organizational culture enablers and inhibitors for Lean in Saudi Arabian SMEs in the manufacturing sector.
- To explore an Organizational culture that influences Lean implementation within Saudi Arabian manufacturing SMEs
- To develop themes of an Organizational culture that facilitate Lean implementation within Saudi Arabian manufacturing SMEs.
- To validate the process of exploring and gauging the aspects and themes.
- To develop questionnaire to gauge the current idea position Lean implementation.
- To develop a culture ideal position that manufacturing SMEs should aspire to the most effective Lean Implementation.

The research question is formulated as "*What aspects of Organizational Culture facilitate Lean Implementation in manufacturing*

small and medium enterprises and how can these aspects be leveraged to improve Lean Implementation?" the research question is broken down into the following sub-questions:

1. What are the Organizational Culture enablers and inhibitors to Lean Implementation in small and medium sized manufacturing firms?
2. How can these aspects be created?
3. What are the perceptions of SME employees and their extant position of the company's culture for encouraging Lean Implementation in KSA?
4. What are the ideal positions where the manufacturing SMEs should be maintain?

Contribution to the knowledge, academic contribution, evaluation of causes of failure of implementing Lean Philosophy in SMEs in Saudi Arabia, identifying the OC aspects for SMEs in Saudi Arabia to implement Lean philosophy and filling the literature gap in LI for SMEs where regions of developing countries are considered. *Practitioner contribution*: Introduction to an ideal position of an implementation plan framework of cultural aspects that facilitate LI within SMEs in Saudi Arabia and the practical application of this research output is expanded to have significant financial input to the SMEs performance in the region.

2. Literature review

2.1. Lean philosophy

The aim of Lean manufacturing implementation is that company resources should all be channelled in ways that ultimately create value for the end user (Schouteten and Benders, 2004). In essence it works towards the goal of maintaining value while doing less work and at the heart is achieving greater efficiency (Schouteten and Benders, 2004). The definition of Lean provided by Corbett (2007) The Lean approach percolates into ever wider circles of operations, it ceases to be about the best practice and starts to become a part of the fabric of doing business, emphasises on Lean as an integral part of the entire organisation, essentially pointing to Lean as being considered more of a philosophy than just a tool or process. This is further supported by Womack and Jones (2003) who suggest that Lean is becoming understood as more than just production, but an all-encompassing business ideology which incorporates all aspects of value streams as opposed to individual production processes. According to Bhamu and Singh Sangwan (2014a,b) Lean provides a methodology by which organisations can significantly improve their responsiveness to customers while decreasing and managing costs and waste in supply and operational procedures.

2.2. Organizational culture

National culture and corporate or Organizational Culture share some overlaps due to the behaviour commonly held by the members of the company are also members of the same national culture (Schein, 1984). Goldstein (1957) says that neither the nominal definition of culture nor the synoptically definition is much help when trying to grasp the meaning of a term with so many variables:

> *"Definitions. . .are usually intended to serve one or another of three distinct aims. Of these, the first [nominal definition] may be useful, the second [synoptically definition] is rather futile, and the third [essential definition] entirely pernicious*" (Goldstein, 1957, p. 1075).

Philosophers have suggested that culture is primarily defined by language (Lazăr, 2010), but corporations do not have a 'language' – although efforts to create one have been made (Fredriksson et al., 2006). Although we live in an increasingly globalised world (Held and McGrew, 2000), national and local culture still has a large influence on the way that businesses are run and operate. According to Davis (1985) culture is defined as, the pattern of shared beliefs and values that give members of an institution meaning, and provide with the rules for behaviour in their organisation," (Sun, 2008, p. 138).

According to Hofstede et al. (1991) culture influences the way in which people behave so undeniably it is important to understand the culture of an organisation. Podrug (2011) suggests that a person's decision making process is dependent on their cultural background according to what is considered 'the right way' highlighting the importance of national culture on OC (Podrug, 2011).

Various definitions of OC exist, yet there are a number of similarities which include the frame work established by Schein (1984) the existence of "artefacts, values and beliefs and the behaviours which are commonly shared and accepted by members in the organisation" (Detert et al., 2000, p. 851). One of the most well-known definitions of OC is, "The way we do things around here," (Sun, 2009, p. 137), OC also distinguishes between one company from the other (Vijay, 1985). Kotter and Heskett (1992) suggest that OC impacts on organizational performance. According to Siehl and Martin (1989) culture has an influence on the attitudes of individuals and employees in a company and consequently impact on organizational effectiveness. According to Brown (1998) OC can be defined as, "...the pattern of beliefs, values, and learned ways of coping with experience that have developed during the course of an organisations history, and which tend to be manifested in its material arrangements and in the behaviours of its members (Sun, 2009, p. 137).

3. Methodology

Qualitative research is confirmed to be useful for uncovering such insider views (Corbin and Strauss, 1990). The research will be based on qualitative and grounded theory inside action research with and an inductive approach. Action research tends to be used for prompting conscious change within a somewhat controlled environment (Collis and Hussey, 1938). In this approach the participants and the researchers collaborate on a problem to find a solution (Coghlan and Brannick, 2014). This is an inquiry mode generally utilised to help solve organizational issues by dealing with those experiencing the problems (Ibrahim, 2013). Some main weaknesses associated with action research is the assumption that the behaviour of a person is only able to be changed by testing them and moreover, it tends to require set timelines and is usually expensive to conduct over the full research period (Fisher, 2007). Grounded theory is a research methodology which aims to create a theory from data which has been systematically researched and analysed (Strauss, 1987). This methodology was founded originally by Glaser and Strauss (1967). According to Golden-Biddle and Locke (2007). grounded theory has been the most vastly utilised qualitative methodology in social science research. Its popularity can be attributed to; firstly, its suitability for developing new theory or new insights form old theory. Secondly, it generates theory which stems from what the research participants consider important. Finally, it is able to expose micro-management processes in complex situations and environments (Locke, 2001). Goulding (1998) suggests grounded theory is particularly useful for making new discoveries thus its usefulness for theory generation. Furthermore, Locke (2001) and Goulding (2005) also consider grounded theory as useful where there is a clear lack of integrated theory in an area of literature. The main feature of this approach is to develop categories which highlight the data and develop the

categories to create a framework (Silverman, 2006). Due to the nature of the topic requiring the exploration of culture it is beneficial to utilize qualitative research. An inductive approach enables the researchers to become fully engaged within the research environment thus improving the understanding of the culture being studied, facilitating a more insider's view of the culture (Walker and Myrick, 2006). Furthermore, it is important to note that most methodologies require extensive literature reviews to inform the research and identify the research question as most research methodology is conducted with a deductive approach (Dick, 2006). In contrast, grounded theory being inductive ends with a theory as opposed to beginning with a hypothesis and instead is used as a method for reviewing literature (Trochim and Donnelly, 2001). Hence why research questions and hypotheses are made redundant in grounded theory so, literature is generally used as a comparator (Dick, 2006).

From the interviews, all the results will constantly be compared to the information found in the literature review. During the coding, the process becomes more structures to validate relationships within the data and finally during themes, the agenda becomes more deliberate in order integrate the findings within the categories to achieve data saturation (Corbin and Strauss, 2008). Data saturation refers to the stage when the data collected in the research is now redundant (Bogdan and Biklen, 2007). This is necessary to ensure enough data has been collected to reflect the perspectives of the research participants (Kolb, 2012).

Data analysis in qualitative research deals with words, and the meanings implied by them (Miles and Huberman, 1994). The analysis of the information gathered is done by context analysis and discovering categories and their interrelationships. The program utilised for this is NVIVO software for coding. The tool generally employed to study culture consist of; semi structured or in-depth interviews, observation, literature review and focus groups. Focus groups are another tool for revealing cultural assumptions and according to Schein, "*because the group provides the stimulus to bring out what is ordinarily hidden*" (Schein, 1985). The main premise of the focus group for this research is that the participants will name the categories and provide the data for under each category. Thus, it will fully reflect the ideas and perceptions of what is important to the employees. Interviews are open ended questions gaining in-depth responses about people's experiences, perceptions, opinions and feelings and knowledge (Taylor, 2005). In depth interviews/unstructured interviews are often utilised to help expose culturally based values (Patton, 2014). The key here is, the researchers should not introduce cultural values, but instead using open ended questions and the insider's language, they evoke responses revealing the aspects of everyday life in that cultural setting (Creswell, 2013). It is important for the researchers to be conscious of their own biases and influences in the information gathering process (Patton, 2014). It is important however, for the assisting analysts to also understand the research setting from an insider's perspective (Sackmann, 1991). For this research semi structures interviews, will also be utilised. The advantage with semi structures interviews is that it ensures certain topics are covered making it more comparable and reliable qualitative information (Patton, 2014).

In order to obtain a better understanding of the nature of (OCs) within SMEs in manufacturing industry this study will focus on three main criteria; firstly, to expose the implied components of culture from an insider's perspective. Secondly, to be mindful of structural aspects of the culture for example sub cultures (Babbie, 2015). Thirdly, to facilitate comparisons to be made among individuals and research settings (Birkinshaw et al., 2011). The use of this criteria has enabled an issue focused interview style which is founded upon the phenomenological orientation leading to successive comparison (Birkinshaw et al., 2011). In addition; these focus groups and observations are utilised to provide triangulation of results. Issue focussed investigation allows for the fulfilment of the above criteria. Due to the nature of culture being omnipresent, this makes it difficult for people to often reflect and describe when asked a question about it directly (Dey, 1999). Therefore, in order to draw this out it often requires a response to stimulus requiring respondents to interpret something, which is naturally done according to their own cultural basis as opposed to that of the researcher (Sackmann, 1991). Furthermore, and issue focus investigation is particularly suitable because, by presenting them with a stimulus with a specific context, the respondents then tend to access the same library of knowledge already existing in their minds (Sackmann, 1991). This helps to uncover the framework about a specific issue. This then enables comparisons of the interpretations to uncover individual opinions from cultural beliefs which are common among the group (Willis et al., 2007). Issue focussed investigation needs to be conducted cleverly to ensure the participants do not realise the issue is under investigation (Sackmann, 1991).

The phenomenological orientation has its focus on the insider's perspective and their beliefs and concepts, ideas of the (OC) and life within it. It places emphasis on the insider's view of what is considered important and relevant within that setting (Goulding, 2005). The researchers will put aside their own assumption so these do not interfere or influence the respondent's answers. The emphasis is to allow the respondents to gradually unravel their own experiences. In order for the researchers to avoid making judgments based on their own beliefs, these should firstly be made clear (Annells, 1996). The interview procedure in phenomenological orientation is close in style to an in depth or intense interview. This usually consists of a longer introduction and a period of becoming better acquainted. This also gives the researcher the chance to gently introduce the subject of the discussion (Srubar, 1998). The aspects which are brought up by the respondent are the points which are then delved into with more detail. In doing so, the researcher is better able to explore together with the respondent and identify the cognitive frameworks which come up (Bryant, 2009). This process of an established dialogue also enables the researcher to check they have understood the respondent's point of view correctly. This can be done by the researcher mentally answering the question in their head before the respondent has a chance to check their own accuracy (Goulding, 2005). This type of research requires not only flexibility but a rapport to have been well established between the researcher and the respondent because for in depth issues to come to light the interviewee needs to feel comfortable, safe and that a mutual trust exists (Goulding, 2005).

4. Data sampling

The data sample for the participating companies in this main study has been provided in Table 1. The target organisations which the researchers conduct was steel, electric, oil, paper, packaging and construction industries, which are in Saudi Arabia as shown in Fig. 1. The main study was conducted between November 2016 and February 2017. The sampling has been selected based on the experiences of the employees of the organisations mentioned.

Table 1
SMEs data sample.

No.	Industry	Position	Organisation Size
1	Steel manufacturing	Private	Medium
2	Electric manufacturing	Private	Medium
3	Oil manufacturing	Private	Medium
4	Paper manufacturing	Private	Small
5	Packaging manufacturing	Private	Small
6	Construction manufacturing	Private	Small

5. Data collection (stage one)

This highlights for the main research to explore and gauging the organizational culture aspects that encourages the success of LI among SMEs in Saudi Arabia. Therefore, the researchers moved to the main study by visiting six SMEs manufacturing companies. A total of 29 interviews were conducted with employees of all levels from Chief Executive Officers (CEOs) to factory workers. 37 aspects were identified and compared with the literature review. Moreover, two focus groups with eight employees of all levels were formed. The focus groups created 7 themes to further develop the findings with participants. In addition, the researchers applied several processes for validation such as triangulation and inter-rate reliability. Finally, the researcher produced a questionnaire to gauge the OC themes within the SMEs. The result showed *change management and behaviour patterns* need to be considered.

5.1. Semi-structured interview

The researcher conducted twenty-nine semi-structured interviews with all companies listed in Table 1, where they currently face barriers to implement Lean (Karim et al., 2011). The sampling has been selected based on their experiences. The participants ranged in terms of their position in the organizations. Therefore, the sampling method refers more to events and incidents as opposed to participants (Corbin and Strauss, 1990). Prearranged interviews were carried out at employees' place of work. In each instance, a private office was provided and the needs of participants were considered. According to Kvale (1997), face to face interviews and semi-structures are most effective in providing information rich responses. Thus, adhering to the grounded theory process, an issue focussed approach was utilised (Sackmann, 1991). The duration of time of the interviews varied between 40 and 70 min. The initial small talk period consisting of icebreakers, allowed participants to feel at ease. Open ended, issue-focused questions were asked, Sackmann (1991). Open ended questions are more likely to prompt the participant to describe their experiences freely. The interviewees were free to talk as much as they wanted. The interviewees were informed that the interviews would be recorded for accuracy during the data analysis stage. Grounded theory applies great importance to the perspectives and meanings prescribed to actions and contexts by the research participants. The questions been asked are issues focussed in accordance with Sackman's (1991) grounded theory approach.

1. Tell me about an example you have seen implementation of Lean work well?
2. Tell me about situation of Lean implementation has not work well?

5.2. Data analysis

During the data interview collection process, the result was analysed by using context analysis, simultaneous and concurrent data, alongside constant comparison methods. The main study utilised qualitative data software NVivo which is useful to help researchers analyse large data sets which are common in qualitative research. NVivo helps to enter and code data simultaneously helping to find inter-relationships and identify intricate patterns. During this phase of the main study, only open coding was conducted. Thus, the researcher's role involved segmenting the information into smaller parts creating discrete codes. Each code represented a set of events or occurrences. In accordance with grounded theory, looking into these issues deeper helps to place the occurrences on a range from one extreme to another (Blaikie, 2009). Data analysis occurs at the same time as the data gathering where the results are continuously compared to new codes until no new codes emerge (Strauss and Corbin, 1998). The data analysis was conducted using line by line coding of the interview transcripts from which descriptive codes were identified and continuously compared to find similarities, differences and literature. During the analysis research process, the researcher used: *Inter-rate reliability:* The researcher has used the inter-rate reliability to validate the codes. The procedure encourages the use of having two or more independent judges to determine the results and its implications by sampling the stability of their agreement (Rashid, 2010). The result of Inter-rater reliability was 0.73 Cohen Kappa and 96% Percentage of Agreement were obtained during analysis. (see Appendix A)

5.3. Finding and discussion

Having conducted the main study using semi-structured interviews, codes were developed, these can be seen below:

Aspects No.	Aspects of Organizational Culture
1.	Job description
2.	Health & safety awareness
3.	Quality inspection
4.	Professional training in Lean
5.	Many decision makers
6.	Role of Family
7.	Knowledge share
8.	Poor Planning
9.	Short -term focus
10.	Motivation & Reward system
11.	Promotional opportunities
12.	Recruitment process
13.	Workshop tools and guidance
14.	Delay of staff's requests
15.	Resistance of change
16.	Ineffective Multi-tasking
17.	Feedback system
18.	Improper Prioritisation of tasks
19.	Performance indicators
20.	Contingency planning
21.	Teamwork & leadership attitude
22.	Job security
23.	Aggression to the shop floor
24.	Productivity Monitoring
25.	Trust between management employees
26.	Bureaucratic Management style
27.	Innovation management
28.	Loyalty of the staff
29.	Research and development (R&D)
30.	Emphasis over Individual Contribution
31.	System of decision-making
32.	Socialisation of the staff
33.	Emotional Intelligence of Managers
34.	Workload Pressure
35.	Ambiguity of Policies
36.	Obligatory work
37.	Identification of resource

5.4. Constant comparison

During the semi-structured interview collection process, the result has been analysed by using simultaneous and concurrent

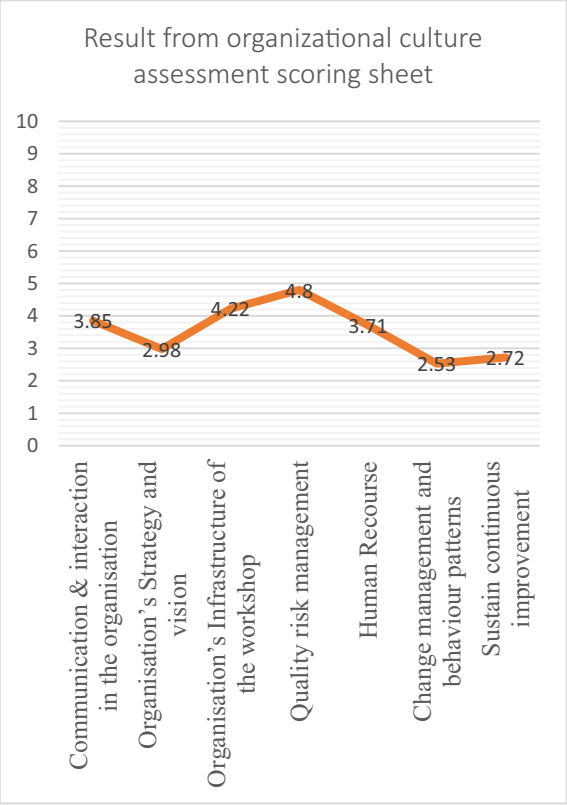

Fig. 1. Result of OC scoring sheet.

data alongside constant comparison methods. Table 2 below presents the aspects of Organizational Culture compared with the literature review.

6. Data collection (stage two)

6.1. Focus group one

The researchers conducted two focus groups after concluding twenty-nine semi-structured interviews. The sampling for both focus groups have been selected based on the candidates' experience. Both focus groups had the same participants. The participants engaged in a process to review the results from the semi-structured interview, with the objective of making suggestions to grouped the aspects to high level themes. The participants involved in the focus group discussions included two CEO's, production engineers, mechanical engineers, chief engineers and two workers. The dates and times were pre-arranged based on the availability of the candidates and interviews were conducted in a private office within a hotel. The first focus group was conducted in early February 2017 and the second focus group was interviewed towards the end of February 2017. Each focus group session lasted a full day. The purpose for this focus group is to help refine and further develop the findings of OC aspects from semi-structured interviews. Personal introduction by the researcher is followed on by introduction of group members. The researcher familiarises participants with the aspects. Frequent short breaks were provided. The process was started by providing information of Stage One Data to participants to encourage discussion. The Participants could express their opinions freely, with little or no interruption by the researcher. Whilst the discussion developed, interesting data emerged. The researcher maintained the interest of the focus group by directing the conversation in an informal manner. The researcher also attempted to encourage participants by asking leading and open-ended questions. This allowed participants to express their opinions more easily by discussing real examples, thus allowing for a thorough, detailed and intensive data set. The observations were noted by the researcher scrupulously. To conclude, participants reviewed the results of the output from

Table 2
Aspects of organizational culture.

No.	Aspects of organizational culture	References
1	Job description	Jadhav et al. (2015)
2	Health & safety awareness	Munene (1995), Dixon (1999)
3	Quality of inspection	Crofton and Dale (1996)
4	Professional training in Lean	Allen and Meyer (1993), Achanga et al. (2006), Panizzolo et al. (2012)
5	Many decision makers	Angelis and Fernandes (2007), Mann (2009), Hu et al. (2015)
6	Role of the family	Al-najem (2014)
7	Knowledge share	Womack and Jones (1996), Shah (2003), Womack and Jones (2003), Shah and Ward (2007), Angelis et al. (2011)
8	Poor Planning	Crofton and Dale (1996), Womack and Jones (1996), Womack and Jones (2003)
9	Short-term focus	Bhasin and Burcher (2006), Bhasin (2012), Laureani and Antony (2016)
10	Motivation and reward system	Angelis et al. (2011), Alsyouf et al. (2011)
11	Promotional opportunities	Angelis et al. (2011)
12	Recruitment process	Allen and Meyer (1993), Womack et al. (1990)
13	Workshop tools and guidance	Shah (2003), Shah and Ward (2007)
14	Delay in processing staff requests	Angelis et al. (2011)
15	Resistance of change	Bhamu and Singh Sangwan (2014b), Jadhav et al. (2014)
16	Ineffective Multi-tasking	Bessant and Caffyn (1997)
17	Feedback system	Angelis et al. (2011), Womack and Jones (1996), Shah (2003), Womack, and Jones (2003), Shah and Ward (2007), Angelis et al. (2011)
18	Improper Prioritisation of tasks	Swank (2003)
19	Performance indicators	Shah (2003), Shah and Ward (2007), Yan-jiang et al. (2006)
20	Contingency planning	Crofton and Dale (1996)
21	Teamwork & leadership attitude	Womack et al. (1990); Laureani and Antony (2016)
22	Job security	Marodin and Saurin (2013)
23	Aggression on the shop floor	Hu et al. (2015), Angelis et al. (2011), Mann (2009), Al-Najem et al. (2012)
24	Productivity Monitoring	Bessant and Caffyn (1997), Swank (2003)
25	Cooperation and mutual trust between management employees	Jadhav et al. (2014)
26	Bureaucratic Management	Al-Najem et al. (2012), Laureani and Antony (2016)
27	Innovation management.	Jadhav et al. (2015)
28	Loyalty of the staff	Al-najem (2014), Dahlgaard and Mi Dahlgaard-Park (2006)
29	Research and development (R&D)	(Not found)
30	Emphasis on the Individual Contribution	(Not found)
31	System of decision-making	Angelis et al. (2011)
32	Socialisation of the staff	(Not found)
33	Emotional Intelligence of Managers	Dahlgaard and Mi Dahlgaard-Park (2006)
34	Workload Pressure	Jadhav et al. (2014)
35	Ambiguity of Policies	Hu et al. (2015)
36	Obligatory work	(Not found)
37	Identification of resources	Jadhav et al. (2014), Marodin and Saurin (2013), Laureani and Antony (2016)

the stage one data collection (interview). Thus, bringing about 39 codes and providing definition for each code. Having conducted the prime study of semi-structured interviews, the following aspects were developed.

6.2. Focus group two

The purpose for the focus group two is to aggregate the cultural aspects developed into higher level themes. The researchers presented the output results from the first focus group to allow the participants to familiarise themselves with the subject matter. Refreshments and ample breaks were provided. The researchers started the process with information from the first focus group to review, refine and discuss with participants. The participants starting to group the codes in seven categories, and provided definition for each category. Appendix B provides an overview of categories. 7 categories have been identified by the participants, each category contain codes. Each theme has suggested definition by participants shown in Table 3 in Appendix A.

7. Validation

All these aspects have been reviewed and discussed by participants through Focus Group One. Thus, produced aspects, each aspect has a definition. Moreover, categories were identified during Focus Group Two by grouping all the aspects.

7.1. Credibility

Reliability and authority of the research being judged by credibility (Liamputtong and Ezzy, 2009, p. 21). The idea here is the description fitted with the explanation (Tobin and Begley, 2004, p. 391). Credibility should fit between the researcher represent their viewpoint and what the participants said as leading the researcher should control the risk of reactivity and bias (Padgett, 2008). The way the researcher behaves or asking questions during the interview can raise reactivity. To achieve the credibility for the research two main strategies adopted: Applying the selection of the participant regarding to their knowledge, characteristics and their experiences. Moreover, theoretical sampling gives credibility to the research (Carpenter and Suto, 2008). When the interpretation and description being recognised by the participants. Therefore, it can be achieved (Johnson and Waterfield, 2004).

7.2. Confirmability

Conformability is the ability and capability of all other researcher to confirm the research result (Lincoln and Guba, 1985). It is to confirm that the results from the research are linked to the data (Padgett, 2008). It can also be defined as the degree to which result are specified by respondents and not by perspective of the researcher (Lincoln and Guba, 1985, p. 290). Therefore, conformability can be achieved by presenting the data from the research and analysing steps leading to the result.

7.3. Dependability

Dependability (Auditability) is the degree of how the study is documented to allow other researchers to trace and follow the research process (Padgett, 2008). Dependability is confirmed when the research process is well documented and tractable (Tobin and Begley, 2004, p. 392). Therefore, it can be compared to reliability (Liamputtong and Ezzy, 2009, p. 22). Dependability is to have assurance that the findings fit to the derived data (Carpenter and Suto, 2008, p. 150).

The idea behind the dependability is based on repeatability. Consequently, it is concerned with whether the researcher is capable or able to obtain the same results from the findings of the research. However, a researcher cannot obtain the same output from the research because he/she is measuring two or more different things. Therefore, the researcher should give details and describe the changes that take place and how this change influences the way the research is approached. For example (Lietz and Zayas, 2010, p. 196) stated, "One *way of addressing the need to make decisions and changes along the way is to provide detailed documentation throughout the research project*." Therefore, "*Keeping an audit trail and engaging in peer debriefing.*" are two strategies that shape the dependability (Lietz and Zayas, 2010, p. 196).

7.4. Transferability

Transferability is the capability to apply the findings of the research to other settings, situations, contexts, events and to individuals or groups (Padgett, 2008). In other words, it is the degree to which findings can be applied to other settings or contexts (Carpenter and Suto, 2008, p. 149). By in-depth descriptions about the phenomenon that other researchers should be able to understand, if the results from the findings are applicable to fit into other settings and contexts (Devers, 1999; Lietz and Zayas, 2010). For the researcher, this can help them to judge if the present findings from the research can be generalised or transferred to another context.

7.5. Triangulation

Denzin (1973) located four kinds of triangulation where applied and adopted to this research. Using multiple methods such as observation and in-depth interview together in the research (Padgett, 2008). This drives the validity to the research, and the same result is aligned and confirmed through different methods in the research. Secondly, the researcher triangulation, which suggests that there is validated cross verification by collecting data, observations and analysis (Sands and Roer-Strier, 2006). Source triangulation or data triangulation considered as the third kind of triangulation. By using multiple quotations, collecting data from many different locations and involving multiple participants (Sands and Roer-Strier, 2006, p. 238; Carpenter and Suto, 2008, p. 153). The fourth and the last kind of triangulation is labelled theoretical triangulation by using different theoretical framework within the same research or the study in order to interpret the results from the study (Padgett, 2008).

7.6. Inter-rate reliability

In this research, the inter-rate reliability took place in the early stage of the analysis process (See Appendix B). The procedure requires having two or more judges independently to determine the significance, degree and sample stability of their agreement (Rashid, 2010). Gwet (2002) suggests that evaluation of the agreement between two or more ratters is commonly used in social, medical and behavioural sciences. Inter-rater reliability of 0.73 Cohen Kappa and 96% Percentage of Agreement were obtained during analysis. the result shows in Appendix C.

8. Questionnaire for gauging current perception of participants

The results were discussed with participants in focus group part two was drove to joint review of the assessment result and their relevance to the organizational culture. In order to gauge the organizational culture more specifically, an assessment tool based on the organizational culture theme description in Table 3 was

participative developed with the participants. *Likert* scale has been used for this questionnaire (see Appendix C), it is to gauge current perception of participants against ideal position. A series of short statements relating to each of the seven themes were developed with the team in focus group two to describe an ideal position of the required organizational culture. Statement for each theme indicated the ideal position organizational culture for Lean implementation. The participants assessed their perception of the organizational culture by gauging how close they perceived they were to ideal position of the seven themes, reflecting the ideal position of the organizational culture for manufacturing SMEs. Table 3 in Appendix A below shoes the statements for each theme. The questionnaire has sent to the participants by email. See Appendix C for organizational culture assessment scoring sheet. A total of 71 responses were returned. All the scores were added together and averaged to produce a group perspective of the participants' position against an ideal position for organizational culture. The result is shown in figure below

The result indicates the number of issues that were identified. It is noticeable that all the results were in the dissatisfaction area. The lowest scoring theme was *change management and behaviour patterns*. What stands out in this figure is the high rate of organisation *infrastructure of the workshop*. In summary, these results show the current state of the position for the firms regarding Lean Implementation from the participant's perspective.

9. Conclusion

In conclusion, the paper aims to identify aspects of LI in SMEs in the Saudi Arabia. It proposes aspects of social transformation process and how the aspects are affected by OC. The paper opted for an exploratory study using semi-structure interviews, focus groups and observation approaches of grounded theory and action research. 29 in-depth interviews with employees ranging in terms of their position in the organizations, having mainly an experience of the LI background. The data was complemented by context analysis, including simultaneous and concurrent data collection and constant comparison methods. The paper provides empirical insights about how change is brought about during implementing Lean. However, there were four aspects which have not been evidenced in prior research and were not identified in the literature review. These include; Research and Development (R&D), emphasis on individual contributions, socialisation of staff and obligatory work. 37 aspects have been identified from semi-structured interviews. All these aspects have been aggregated through focus

Table 3
Themes developed from all interview data.

Higher level them	Aspects code	Aspects grouped together into higher level	Participants used describe higher level theme
Communication & interaction in the organisation	5	Many decision makers	Convoy your massage to other personal or a group. Thus, the employees know exactly what is important, who is supposed to do what and when. Communication among the staff climate formal and informal information flows in time for inquiry and reflection use of humour and many other languages.
	7	Knowledge share	
	14	Delay of staff's requests	
	16	Ineffective	
	34	Workload Pressure	
Organisation's Strategy and vision	8	Poor Planning	An essential factor which influences different control system configuration and operational environment change. Identify tactics and roadmap to achieve the mission of the organization. Generate an objective to align the managerial practices process with their strategies priorities to improve their performance, system of decision making and to applied in the organization.
	9	Short -term focus	
	18	Improper Prioritisation of tasks	
	35	Ambiguity of Policies	
	31	System of decision-making	
	6	Role of Family	
Organisation's Infrastructure of the workshop	2	Health & safety awareness	This theme refers to the structure of the organization around the employee. Easily for employees to move with security around within the confinements of their workplace. Poor Infrastructure planning was evident from the layout of the workshop. Ineffective planning resulted in redundant activities and procedures indicating a re-design of workshop layout to complement Lean.
	13	Workshop tools and guidance	
Quality risk management	3	Quality inspection	A group of business process, technology capabilities and operation environment to create a collaborative program to identifying mitigating product, quantifying, operational risks that can be impact quality.
	19	Performance indicators	
	20	Contingency planning	
	29	Research & development (R&D)	
Human Recourse	1	Job description	This them refer to the employees' issues. It is a set of role related to the employee, describing their duty. Determine the needs of the employee and recruit best employees. Dealing with performance and trouble issues. Pushing the employees to the best in their job.
	10	Motivation and reward system	
	11	Promotional opportunities	
	12	Recruitment process	
	22	Job security	
	17	Feedback system	
Change management and behaviour patterns	21	Teamwork & leadership attitude	Approach to transitioning group, team and organization using tactics to redirect the use of organization system process, resources, organization environment, the reaction of the employees or any other method in the operation that reshape effectively the organization.
	23	Aggression to the shop floor	
	36	Obligatory work	
	26	Bureaucratic Management	
	15	Resistance to change	
Sustain continuous improvement	25	Cooperation and mutual trust between employees.	keep going or to keep up to improve the employee and process performance to be continually monitored. Focusing to increase the capabilities, efficiency and the effectiveness to achieve its objectives. Identify the opportunity for streaming work. Many employees in the top management were aware of the prevailing gap in the organisation at various functions of engagements such as operations, human relations, and productions.
	28	Loyalty of the staff	
	33	Emotional Intelligence of managers	
	30	Emphasis on the Individual contribution	
	27	Innovation management.	
	37	identification of resources	
	32	Socialisation of the staff	
	4	Professional training in Lean	
	24	Productivity Monitoring	

groups to 7 main themes. This paper fulfils an identified need to study how the OC affects LI. It contributes to the current state of LI in manufacturing companies by uncovering the correlation between enablers and inhibitors of OC in Saudi Arabia. An questionnaire has been undertaken and provide a low result of perception of participants agents the ideal position. an ideal position where the manufacturing SMEs should be maintained. Yet, this paper has certain limitation. It was constrained to Saudi Arabia's manufacturing SMEs. Further research will be shaped by identified an intervention to enhance the themes to be in the desired ideal position. Following the interventions being developed, a framework will be developed to facilitate Lean implementation in manufacturing SMEs by leveraging Organizational culture. This study has not covered all the manufacturing sectors within the Saudi Arabia context, and it is important to apply it to sectors such as food and beverages; textiles, clothing and leather; wood and wood products; furniture, etc. Increasing the sample size would be another avenue by which to provide more accurate results in the future. Future research is needed to develop a framework to facilitate lean implementation by leveraging aspects of organizational culture for SMEs manufacturing sector.

Appendix A

See Table 3

Appendix B

B.1. Inter-rater reliability

See Table 4

There is two ways commonly used in Inter-rate reliability, namely Cohen-Kappa (K) and percentage of agreement (%) (Gwet, 2002; Hsu and Field, 2003). The formulation shown below:

B.1.1. Cohen's Kappa method

$$K = (F1 - F2)/(N - F2),\ K = 0.00 \text{ to } 1.00$$

Where F1 = a + d

$$F2 = [(a+b)(a+c) + (b+d)(c+d)]/N$$

$$N = a + b + c + d$$

The degrees of agreement indicated by Kappa are given in the table below (see Table 5):

Table 4
Distribution of subjects (Gwet, 2002).

	Ratter A		
Ratter B	Yes	No	Total
Yes	[a]	[b]	B (Yes) = a + b
No	[c]	[d]	B (No) = c + d
Total	A (Yes) = a + c	A (No) = b + d	N

Where:
[a] Total number of subjects classified as (Yes) units by both ratters.
[b] Total number of subjects classified as (Yes) units by ratter B and as (No) units by ratter A.
[c] Total number of subjects classified as (Yes) units by ratter A and as (No) units by ratter B.
[d] Total number of subjects classified as (No) units by both ratters" adopted from Rashed (2010).

Table 5
The degree agreement between the ratters (Huddleston 2003, Rashed, 2010).

K Value ranges	Degree of Agreement between ratters
0.08–1.00	Almost Perfect
0.60–0.79	Substantial
0.40–0.59	Moderate
0.20–0.39	Fair
0.00–0.19	Slight
≤0.00	Poor

B.1.2. Percentage of agreement method

The formula of percentage of agreement = [(a + d)/N] * 100%.

Table below shows the level of agreement between ratters according to their percentage of agreement (see Table 6):

Table 6
Level of agreement between the ratters (Huddleston, 2003, Rashed, 2010).

Percentage ranges	Level of Agreement between ratters
91–100	Very high
81–90	High
71–80	Moderate
61–70	Fair
51–60	Slight
≤50	Poor

Appendix C

C.1. Inter-rater reliability result

No	Interview	Rater 1	Rater 2	Kappa	%
1	Interview No. 7	33	31	0.72	94%
2	Interview No. 8	30	29	0.78	97%
3	Interview No. 17	46	45	0.79	98%
4	Interview No. 18	49	49	1.00	100%
5	Interview No. 25	39	38	0.79	97%
6	Interview No. 30	43	42	0.79	98%
7	Interview No. 2	24	23	0.34	96%
8	Interview No. 4	50	48	0.65	96%
9	Interview No. 13	27	25	0.63	93%
10	Interview No. 5	39	38	0.79	97%
11	Interview No. 27	39	38	0.79	97%
12	Interview No. 11	30	28	0.64	93%
	Average			0.73	96%

References

Achanga, P., Shehab, E., Roy, R., Nelder, G., 2006. 'Critical success factors for lean implementation within SMEs', Journal of Manufacturing Technology Management. Edited by S. Saad 17 (4), 460–471. https://doi.org/10.1108/17410380610662889.

Albliwi, S.A., Antony, J., Arshed, N., Ghadge, A., 2017. Implementation of lean six sigma in Saudi Arabian organisations. Int. J. Qual. Reliab. Manage. 34 (4), 508–529. https://doi.org/10.1108/IJQRM-09-2015-0138.
Alkhoraif, A., Mclaughlin, P., 2017. Organisational culture-enablers and inhibitors factors for the effective implementation of lean within SMEs. Int. J. Lean Thinking 8 (2).
Alkhoraif, A., 2016. 'Organisational Culture that Inhibit the Lean Implementation', The European Business & Management Conference, pp. 39–58. Available at: http://www.iafor.org.
Allen, N.J., Meyer, J.P., 1993. Organizational commitment: Evidence of career stage effects? Journal of Business Research 26 (1), 49–61. https://doi.org/10.1016/0148-2963(93)90042-N.
Al-najem, M., 2014. Investigating the Factors Affecting Readiness for Lean System Adoption within Kuwaiti Small and Medium-Sized Manufacturing Industries. University of Portsmouth.
Al-Najem, M., Dhakal, H., Bennett, N., 2012. The role of culture and leadership in lean transformation: a review and assessment mode. International Journal of Lean Thinking 3 (1), 119–138.
Alsyouf, I., Aomar, R Al, Hamed, H Al, Qiu, X., 2011. A framework for assessing the cost effectiveness of lean tools. European J. of Industrial Engineering 5 (2), 170. https://doi.org/10.1504/EJIE.2011.039871.
Angelis, J., Conti, R., Cooper, C., Gill, C., 2011. Building a high-commitment lean culture. Journal of Manufacturing Technology Management 22 (5), 569–586. https://doi.org/10.1108/17410381111134446.
Angelis, J.J., Fernandes, B., 2007. Lean practices for product and process improvement: involvement and knowledge capture. In: Advances in Production Management Systems. Springer US, Boston, MA, pp. 347–354. https://doi.org/10.1007/978-0-387-74157-4_41.
Annells, M., 1996. Grounded theory method: philosophical perspectives, paradigm of inquiry, and postmodernism. Qual. Health Res. 6 (3), 379–393. https://doi.org/10.1177/104973239600600306.
Babbie, E., 2015. The practice of social research. Wadsworth Cengage Learning.
Bessant, J., Caffyn, S., 1997. High-involvement innovation through continuous improvement. International Journal of Technology Management 14 (1), 7. https://doi.org/10.1504/IJTM.1997.001705.
Bhamu, J., Singh Sangwan, K., 2014b. Lean manufacturing: literature review and research issues. Int. J. Oper. Prod. Manage. Emerald Group Publishing Ltd. 34 (7), 876–940. https://doi.org/10.1108/IJOPM-08-2012-0315.
Bhamu, J., Singh Sangwan, K., 2014a. Lean manufacturing: literature review and research issues. Int. J. Oper. Prod. Manage. 34 (7), 876–940. https://doi.org/10.1108/IJOPM-08-2012-0315.
Bhasin, S., 2012. 'Prominent obstacles to lean', International Journal of Productivity and Performance Management. Emerald Group Publishing Limited 61 (4), 403–425. https://doi.org/10.1108/17410401211212661.
Bhasin, S., Burcher, P., 2006. Lean viewed as a philosophy. Journal of Manufacturing Technology Management 17 (1), 56–72. https://doi.org/10.1108/17410380610639506.
Birkinshaw, J., Brannen, M.Y., Tung, R.L., 2011. From a distance and generalizable to up close and grounded: Reclaiming a place for qualitative methods in international business research. Journal of International Business Studies 42 (5), 573–581. https://doi.org/10.1057/jibs.2011.19.
Blaikie, N., 2009. Designing social research. Polity Press, Cambridge.
Bogdan, R., Biklen, S.K., 2007. Qualitative Research for Education: An Introduction to Theories and Methods. Pearson A & B.
Brown, A., 1998. Organisational Culture. Financial Times.
Brown, K.A., Willis, P.G., Prussia, G.E., 2000. Predicting safe employee behavior in the steel industry: development and test of a sociotechnical model. J. Oper. Manage. 18 (4), 445–465. https://doi.org/10.1016/S0272-6963(00)00033-4.
Bryant, A., 2009. Grounded theory and pragmatism: The curious case of anselm strauss. Forum Qualitative Sozialforschung 10 (3). http://nbn-resolving.de/urn:nbn:de:0114-fqs090325.
Carpenter, C., Suto, M., 2008. Qualitative Research for Occupational and Physical Therapists : A Practical Guider. Blackwell Publishing, Oxford.
Coghlan, D., Brannick, T., 2014. Doing Action Research in Your Own Organization. Sage.
Collis, J., Hussey, R., 1938. Business Research. Nature 142 (3592), 410–411. https://doi.org/10.1038/142410a0.
Corbett, S., 2007. Beyond manufacturing: The evolution of lean production. McKinsey Quarterly 3, 94–96.
Corbin, J. and Strauss, A. (2008) Basics of Qualitative Research (3rd ed.): Techniques and Procedures for Developing Grounded Theory, Basics of qualitative research: Grounded theory procedures and techniques. Newbury. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc. http://doi.10.4135/9781452230153.
Corbin, J., Strauss, A., 1990. Basics of Qualitative Research: Grounded Theory Procedures and Techniques, Basics of Qualitative Research. Sage.
Creswell, J., 2013. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications.
Crofton, C.G., Dale, B.G., 1996. The Difficulties Encountered in the Introduction of Total Quality Management: A Case Study Examination. Quality Engineering. Taylor & Francis Group 8 (3), 433–439. https://doi.org/10.1080/08982119608904645.
Dahlgaard, J.J., Mi Dahlgaard-Park, S., 2006. 'Lean production, six sigma quality, TQM and company culture', The TQM Magazine. Edited by S. Mi Dahlgaard-Park, 18(3), pp. 263–281. doi: 10.1108/09544780610659998.
Davis, T., 1985. Managing culture at the bottom, Gaining control of the corporate culture. Jossey-Bass, San Francisco.
Denzin, N., 1973. The research act: A theoretical introduction to sociological methods. Routledge.
Detert, J.R., Schroeder, R.G., Mauriel, J.J., 2000. A framework for linking culture and improvement initiatives in organizations. Acad. Manag. Rev. 25 (4), 850–863. https://doi.org/10.5465/AMR.2000.3707740.
Devers, K., 1999. How will we know" good" qualitative research when we see it? Beginning the dialogue in health services research. Health Serv. Res. 34 (5), 1153–1188.
Dey, I., 1999. Grounding Grounded Theory: Guidelines for Qualitative Inquiry. Academic Press.
Dick, B., 2006. 'Grounded theory: a thumbnail sketch'.
Dixon, N.M., 1999. The Organizational Learning Cycle: How We Can Learn Collectively. Gower Publishing Ltd, London.
European Commission, 2011. (no date) Guide to EU definition of SME, 2011. Available at: http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/index_en.htm (Accessed: 15 May 2015).
Fisher, C. (2007) Researching and writing a dissertation: a guidebook for business students. Pearson Education.
Fredriksson, R., Barner-Rasmussen, W., Piekkari, R., 2006. The multinational corporation as a multilingual organization. Corporate Commun.: Int. J. Emerald Group Publishing Limited 11 (4), 406–423. https://doi.org/10.1108/13563280610713879.
Glaser, B., Strauss, A., 1967. The discovery of grounded theory, Strategies for qualitative research. London: Weidenfeld.
Golden-Biddle, K., Locke, K., 2007. Composing qualitative research. Sage Publications Inc., London.
Goldstein, L.J., 1957. On defining culture. Am. Anthropologist 59 (6), 1075–1081. https://doi.org/10.1525/aa.1957.59.6.02a00110.
Goulding, C., 1998. Grounded theory: the missing methodology on the interpretivist agenda. Qualitative Market Res.: Int. J. 1 (1), 50–57. https://doi.org/10.1108/13522759810197587.
Goulding, C., 2005. 'Grounded theory, ethnography and phenomenology', Eur. J. Market. Edited by N. Lee, 39(3/4), pp. 294–308. doi: 10.1108/03090560510581782.
Government, S.A., 2015. Saudi Arabia beyond oil: The investment and productivity transformation, McKinsey & Company. Available at: http://vision2030.gov.sa/en/node/8.
Graham-jones, J., Al Muhareb, T.M., 2015. Using lean six-sigma in the improvement of service quality at aviation industry: case study at the departure area in KKIA using lean six-sigma in the improvement of service quality at aviation industry: case study at the departure area in KKIA. Int. J. Social, Manage. Econ. Business Eng. 8 (1).
Gupta, S., Sharma, M., Sunder, M.V., 2016. Lean services: a systematic review. Int. J. Product. Perform. Manage. 65 (8), 1025–1056. https://doi.org/10.1108/IJPPM-02-2015-0032.
Gwet, K., 2002. Kappa statistic is not satisfactory for assessing the extent of agreement between raters. Stat. Methods Inter-rater Reliab. Assess. 1.
Held, D., McGrew, A., 2000. The global transformations reader. Available at: http://www.researchgate.net/profile/David_Held2/publication/200456939_Global_Transformations_Politics_Economics_and_Culture/links/00b7d529782f76ab2d000000.pdf.
Hietschold, N., Reinhardt, R., Gurtner, S., 2014. 'Measuring critical success factors of TQM implementation successfully – a systematic literature review', Int. J. Prod. Res. Taylor & Francis, 52(21), pp. 6254–6272. doi: 10.1080/00207543.2014.918288.
Hofstede, G., Hofstede, G., Minkov, M., 1991. Cultures and organizations: Software of the mind. London: McGraw-Hill. Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.446.3598&rep=rep1&type=pdf.
Hsu, L., Field, R., 2003. Interrater agreement measures: comments on Kappan, Cohen's Kappa, Scott's π, and Aickin's α. Understanding Statistics 2 (3), 205–219.
Hu, Q., Mason, R., Williams, S.J., Found, P., 2015. Lean implementation within SMEs: a literature review. J. Manuf. Technol. Manage. 26 (7), 980–1012. https://doi.org/10.1108/JMTM-02-2014-0013.
Huddleston, J. (2003) An evaluation of the training effectiveness of a co-fidelity multiplayer simulators for air combat training. Cranfield University.
Ibrahim, U. (2013) Investigating the effects of corporate governance of banks in Nigeria: A grounded theory approach. Plymouth University.
Jadhav, J.R., Mantha, S.S., Rane, S.B., 2014. Exploring barriers in lean implementation. Int. J. Lean Six Sigma 5 (2), 122–148. https://doi.org/10.1108/IJLSS-12-2012-0014.
Jadhav, J.R., Mantha, S.S., Rane, S.B., 2015. Roadmap for Lean implementation in Indian automotive component manufacturing industry: comparative study of UNIDO Model and ISM Model. J. Ind. Eng. Int. 11 (2), 179–198. https://doi.org/10.1007/s40092-014-0074-6.
Johnson, R., Waterfield, J., 2004. Making words count: the value of qualitative research Available at: Physiotherapy Res. Int. 9 (3), 121–131 http://onlinelibrary.wiley.com/doi/10.1002/pri.312/full.
Karim, M.A., Aljuhani, M., Duplock, R., Yarlagadda, P., 2011. Implementation of lean manufacturing in saudi manufacturing organisations: an empirical study. Adv. Mater. Res. 339, 250–253. https://doi.org/10.4028/www.scientific.net/AMR.339.250.
Karim, A., Arif-Uz-Zaman, K., 2013. A methodology for effective implementation of lean strategies and its performance evaluation in manufacturing organizations.

Business Process Manage. J. 19 (1), 169–196. https://doi.org/10.1108/14637151311294912.
Kolb, S.M., 2012. Grounded theory and the constant comparative method : valid research strategies for educators. J. Emerg. Trends Educat. Res. Policy Stud. 3 (1), 83–86. Available at: http://jeteraps.scholarlinkresearch.com/articles/Grounded Theory and the Constant Comparative Method.pdf.
Kotter, J.P., Heskett, J., 1992. Corporate Culture and Performance. New York.
Kvale, S., 1997. InterViews: an introduction to qualitative research interviewing. Eval. Program Plann. 3 (20), 287–288.
Laureani, A., Antony, J., 2016. 'Leadership – a critical success factor for the effective implementation of Lean Six Sigma', Total Qual. Manage. Business Excellence. Edited by D. Setijono, 3(4), pp. 1–22. doi: 10.1080/14783363.2016.1211480.
Lazăr, L., 2010. Communication as defining dimension of culture. Acta Universitatis Danubius. Communicatio 2 (1), 43–47.
Liamputtong, P., Ezzy, D., 2009. Qualitative Research Methods. Oxford University Press, Oxford.
Lietz, C., Zayas, L., 2010. Evaluating qualitative research for social work practitioners. Adv. Social Work, 188–202.
Lincoln, Y., Guba, E., 1985. 'Naturalistic inquiry'. The Blackwell Encyclopedia of Sociology.
Locke, K., 2001. Grounded Theory in Management Research. Sage.
MacDuffie, J.P., Helper, S., 1997. Creating lean suppliers: diffusing lean production through the supply chain. California Manage. Rev. 39 (4), 118–151.
Mann, D., 2009. The missing link: Lean leadership. Front. Health Serv. Manage. 26 (2), 15.
Marodin, G.A., Saurin, T.A., 2013. Implementing lean production systems: research areas and opportunities for future studies. International Journal of Production Research 51 (22), 6663–6680. https://doi.org/10.1080/00207543.2013.826831.
Miles, M., Huberman, A., 1994. Qualitative Data Analysis: An Expanded Sourcebook. Sage.
Munene, J., 1995. "Not-on-seat": an investigation of some correlates of organisational citizenship behaviour in Nigeria. Appl. Psychol. 44 (2), 111–122. https://doi.org/10.1111/j.1464-0597.1995.tb01069.x.
of Finance, S.A.M., 2015. Recent Economic Developments and Highlights of Fiscal Years 2015 & 2016. Saudi Press Agency 1437 (2015), 1–10. https://doi.org/10.1038/nature10995.Contact.
Padgett, D., 2008. Qualitative methods in social work research. Sage Publications, Los Angeles.
Pakdil, F., Leonard, K.M., 2015. The effect of organizational culture on implementing and sustaining lean processes. J. Manuf. Technol. Manage. 26 (5), 725–743. https://doi.org/10.1108/JMTM-08-2013-0112.
Panizzolo, R., Garengo, P., Sharma, M.K., Gore, A., 2012. Lean manufacturing in developing countries: evidence from Indian SMEs. Production Planning & Control 23 (10–11), 769–788. https://doi.org/10.1080/09537287.2011.642155.
Patton, M.Q., 2014. Qualitative Research & Evaluation Methods: Integrating Theory and Practice: Integrating Theory and Practice. SAGE Publications.
Pingyu, Y., Yu, Y., 2010. A review on lean manufacturing practices in small and medium enterprises. Int. J. Innovation, Manage. Technol. 1 (2), 220–225.
Podrug, N., 2011. Influence of national culture on decision-making style. South East Eur. J. Econ. Business 6 (1), 37–44. https://doi.org/10.2478/v10033-011-0004-0.
Rashid, H., 2010. Human Factors Effects in Helicopter Maintenance: Proactive Monitoring and Controlling Techniques. Cranfield University.
Sackmann, S., 1991. Uncovering culture in organizations. J. Appl. Behav. Sci. 27 (3), 295–317.
Sands, R., Roer-Strier, D., 2006. Using data triangulation of mother and daughter interviews to enhance research about families. Qualitative Social Work 5 (2), 237–260.
Schein, E.H., 1984. Coming to a new awareness of organizational culture. Sloan Manage. Rev. 25 (2), 3–16.
Schein, E., 1985. How culture forms, develops, and changes. Gaining Control Corporate Culture, 17–43.
Schonberger, R.J., 2007. Japanese production management: an evolution—With mixed success. J. Oper. Manage. 25 (2), 403–419. https://doi.org/10.1016/j.jom.2006.04.003.
Schouteten, R., Benders, J., 2004. Lean production assessed by Karasek's job demand-job control model. Econ. Ind. Democracy 25 (3), 347–373. https://doi.org/10.1177/0143831X04044831.
Shah, R., 2003. Lean manufacturing: context, practice bundles, and performance. Journal of Operations Management 21 (2), 129–149. https://doi.org/10.1016/S0272-6963(02)00108-0.
Shah, R., Ward, P.T., 2007. Defining and developing measures of lean production. Journal of Operations Management 25 (4), 785–805. https://doi.org/10.1016/j.jom.2007.01.019.
Siehl, C., Martin, J., 1989. Organizational Culture: A Key to Financial Performance? Graduate School of Business, Stanford University.
Silverman, D., 2006. Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction. Sage, Los Angeles.
Srubar, I., 1998. Phenomenological analysis and its contemporary significance. Hum. Stud. 21 (2), 121–139. https://doi.org/10.1023/A:1005355921478.
Strauss, A., 1987. Qualitative Analysis for Social Scientists. Cambridge University Press.
Strauss, A., Corbin, J., 1998. Basics of Qualitative Research: Procedures and Techniques for Developing Grounded Theory. Sage.
Sun, S., 2009. Organizational culture and its themes. Int. J. Business Manage. 3 (12). https://doi.org/10.5539/ijbm.v3n12p137.
Swank, C., 2003. The lean service machine. Harvard business review 81 (10), 123–130.
Taylor, G. R. (2005) Integrating Quantitative and Qualitative Methods in Research. University Press of America.
Tobin, G., Begley, C., 2004. Methodological rigour within a qualitative framework. J. Adv. Nursing 48 (4), 388–396.
Trochim, W., Donnelly, J., 2001. 'Research methods knowledge base'.
Walker, D., Myrick, F., 2006. Grounded theory: an exploration of process and procedure. Qual. Health Res. 16 (4), 547–559. https://doi.org/10.1177/1049732305285972.
Willis, J., Jost, M., Nilakanta, R., 2007. Foundations of qualitative research: Interpretive and critical approaches. Sage, SAGE Publications.
Womack, J.P., Jones, D.T., Roos, D., 1992. The machine that changed the world. Business Horizons 35 (3), 81–82. https://doi.org/10.1016/0007-6813(92)90074-J.
Womack, J.P., Jones, D.T., 1996. Beyond Toyota: How to Root Out Waste and Pursue Perfection. Harvard Business Review 74 (5), 140–158.
Womack, J., Jones, D.T., 2003. Lean thinking: banish waste and create wealth in your corporation. Simon and Schuster. New York.
Yan-jiang, C., Lang, X. and Xiao-na, W. (2006) 'Empirical Study of Influencing Factors of Continuous Improvements', in 2006 International Conference on Management Science and Engineering. IEEE, pp. 577–581. doi: 10.1109/ICMSE.2006.313966.

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